ENGINEERING EDUCATION - DOCTOR OF PHILOSOPHY (PHD)

The Engineering Education (ENED) doctoral program is designed for students with a background in engineering and an interest in improving the education of engineers. Our vision of engineering education goes beyond curriculum design and pedagogy to include attracting and graduating diverse students with a well-rounded education and a desire to improve society and the environment. ENED graduates will be prepared to conduct research to study significant problems in engineering education, apply research-based instructional strategies in engineering courses, and understand policy implications for student success. The flexible and cross-disciplinary Engineering Education PhD program is designed to allow students to tailor their curriculum and research and to prepare them to achieve their goals in engineering education.

The PhD program is open to first-time graduate students as well as those who hold master's degrees.

For more information, visit the Engineering Education PhD Program (https://www.colorado.edu/program/ide/phd-engineering-education/) page.

Requirements

Required Courses and Credits

All Engineering Education PhD students must complete a minimum of 30 credit hours of coursework at the 5000 level or higher, plus 30 credit hours of dissertation credits. Some research advisors will require that their students complete more than 30 course credits, and the department recommends that specific course decisions should be agreed upon through individual faculty/student discussions. Students must receive a minimum grade of B- (2.7) in each class to count towards the degree. Students must also maintain a cumulative GPA of 3.0 or higher to be in good standing with the graduate school.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>Required Courses 1</td>
<td>Engineering or computer science technical courses</td>
<td>9</td>
</tr>
<tr>
<td>Designated engineering education related courses. Approved courses include but are not limited to ENED and EDUC. 2</td>
<td>12</td>
<td></td>
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<tr>
<td>Additional relevant credit hours from engineering, education, or other fields (e.g., business, sociology, psychology)</td>
<td>9</td>
<td></td>
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<tr>
<td><strong>Total Credit Hours</strong></td>
<td><strong>30</strong></td>
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ENED 6999 Graduate Seminar in Engineering Education
ENED 7999
ENED 8999 Doctoral Dissertation
INFO 5602 Information Visualization
PHYS 5460 Teaching and Learning Physics
PSYC 5145 Advanced Cognitive Psychology
PSYC 5835 Thinking Proseminar
SOCY 5031 Research Design
SOCY 5111 Statistics 1: Introduction to Social Statistics
SOCY 5181 Logics of Qualitative Inquiry
SOCY 6111 Stats 2: Statistic Analysis
SOCY 6121 Qualitative Methods
SOCY 7111 Data III–Advanced Data Analysis
SOCY 7121 Qualitative Analysis
STAT 5000 Statistical Methods and Application I
STAT 5010 Statistical Methods and Applications II

Additional Coursework
The remaining credit hours can be related to either the engineering cognate area or education courses as described above as befits the individual student, with the approval of their faculty advisor and dissertation committee.

Total Credit Hours 30

Preliminary Examination
Satisfactory completion of a preliminary examination. Engineering Education PhD students are required to pass a preliminary examination that will include written and/or oral components, per the discretion of a group of 3 or more faculty affiliated with the ENED program in consultation with the student. This is typically completed within the first three semesters after matriculation into the program.

Comprehensive Examination
Satisfactory completion of a comprehensive examination to defend the PhD thesis proposal. The Comprehensive Examination is an important second evaluation step required to advance the student to candidacy for the PhD degree. It is typically completed within the first three years after matriculation to the program and more than one year prior to graduation. It consists of a written research proposal in addition to an oral exam with a selected committee of faculty advisors, both focusing on the proposed course of research.

PhD Dissertation
Satisfactory completion of a minimum of 30 semester hours of dissertation credits. Satisfactory completion and defense of a PhD dissertation under the supervision of a research advisor who is a CU Boulder faculty member affiliated with the ENED program. The dissertation must fulfill all Graduate School requirements. After the dissertation is completed, an oral final examination on the dissertation and related topics is conducted by the student’s doctoral committee.

Time Limit
All degree requirements for the Engineering Education PhD must be completed within six years of the date commencing coursework.